

What is claimed is

1. An orthogonal frequency division multiplexing (OFDM) receiving apparatus for selectively using a plurality of orthogonal frequency division multiplexing reception signals, said orthogonal frequency division multiplexing receiving apparatus comprising:

a plurality of receiving antennas;

carrier restoring section provided for each of said plurality of receiving antennas, said carrier restoring section including:

Radio frequency and intermediate frequency section for down-converting a reception signal from a radio frequency band to a base band signal;

digital converter for converting an analog base band signal into a digital signal, and

Fourier-transform section for Fourier-transforming said digital signal converted by said digital converter and extracting a carrier in frequency domain from said Fourier-transformed digital signal;

sub-carrier selecting section for comparing powers of output signals from said carrier restoring section provided for each sub-carrier, and selectively combining the powers of said output signals for each sub-carrier; and

power controlling section for controlling power supplied to said carrier restoring section connected to said receiving antennas, based on sub-carrier selection information from said sub-carrier selecting section.

2. The orthogonal frequency division multiplexing receiving apparatus as set forth in claim 1, further

comprising:

a deinterleaver for deinterleaving the digital signal output from said digital converter; and

a decoder for decoding said deinterleaved signal.

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3. The orthogonal frequency division multiplexing receiving apparatus as set forth in claim 1, wherein said power controlling section selects a receiving antenna for signal reception signal based on said sub-carrier selection
10 information, and shuts off power supplied to at least part of other connected circuits of said carrier restoring section.

4. The orthogonal frequency division multiplexing
15 receiving apparatus as set forth in claim 3, wherein said power controlling section shuts off power supplied to part of circuits of said carrier restoring section connected to an antenna other than the selected receiving antenna, including said Fourier transforming section.

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5. The orthogonal frequency division multiplexing receiving apparatus as set forth in claim 3, wherein said power controlling section selects an antenna from which a satisfactory reception signal can be obtained, by comparing
25 average powers of reception powers of header sections of packets received by each of said plurality receiving antennas.

6. The orthogonal frequency division multiplexing
30 receiving apparatus as set forth in claim 3, wherein said power controlling section selects an antenna from which a

satisfactory reception signal can be obtained, by comparing average powers of reception powers at each antenna related to a pilot signal introduced to each of a symbol.

5 7. The orthogonal frequency division multiplexing receiving apparatus as set forth in claim 3, further comprising:

open/close switch provided for each of said plurality of receiving antennas and said carrier restoring sections;
10 and

a switch controlling section for turning an open/close switch corresponding to said selected receiving antenna on and turning open/close switches of other receiving antennas off.

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8. The orthogonal frequency division multiplexing receiving apparatus as set forth in claim 3, further comprising:

sub-carrier selectively combining mode for causing
20 said power controlling section to supply drive power to all said carrier restoring sections connected to each of said receiving antennas and extract carriers from all reception signals, and selectively and combining signals for each sub-carrier at said sub-carrier selecting section; and

25 antenna selection mode for selecting one of said receiving antennas from which a satisfactory reception signal may be obtained, based on said sub-carrier selection information and causing said power controlling section to supply power only to said carrier restoring section that is
30 connected to said selected antenna.

9. An orthogonal frequency division multiplexing receiving apparatus for selectively using a plurality of orthogonal frequency division multiplexing reception signals, said orthogonal frequency division multiplexing
5 receiving apparatus comprising:

a plurality of reception systems including:

receiving antenna;

Radio frequency and intermediate frequency
section for down-converting a reception signal from a
10 radio frequency band to a base band signal;

digital converter for converting an analog base
band signal into a digital signal: and

Fourier transform section for
Fourier-transforming said digital signal converted by
15 said digital converter and extracting a signal of
sub-carrier in a frequency domain from the
Fourier-transformed digital signal;

sub-carrier selecting section for comparing powers of
output signals of each of said receiving systems for each
20 sub-carrier, and selectively combining the powers of output
signals for each sub-carrier;

power detecting section, provided in each of said
plurality of receiving systems, for detecting an average
power of an output signal of said radio frequency and
25 intermediate frequency section;

power comparing section for comparing average powers
of said output signals of said radio frequency and
intermediate frequency sections of each of said receiving
systems; and

30 power controlling section for controlling power
supplied to said digital converter and said Fourier transform

section of each of said receiving systems based on a result of comparison by said power comparing section.

10. The orthogonal frequency division multiplexing
5 receiving apparatus as set forth in claim 9, wherein said power controlling section supplies drive power only to said digital converter and said Fourier transform section connected to a receiving antenna having a maximum average power of reception signal and shuts off power supplied to
10 digital converters and Fourier transform sections connected to the other receiving antennas.

11. An orthogonal frequency division multiplexing receiving apparatus for selectively using a plurality of OFMD
15 reception signals, said orthogonal frequency division multiplexing receiving apparatus comprising:

a plurality of reception systems including:

receiving antenna;

Radio frequency and intermediate frequency
20 section for down-converting a reception signal from an radio frequency band to a base band signal;

digital converter for converting an analog base band signal into a digital signal: and

Fourier transform section for
25 Fourier-transforming said digital signal converted by said digital converter and extracting a signal of sub-carrier in a frequency domain from the Fourier-transformed digital signal;

sub-carrier selecting section for comparing powers of
30 output signals of each of said receiving systems for each sub-carrier, and selectively combining the powers of output

signals for each sub-carrier;

power detecting section, provided in each of said plurality of receiving systems, for detecting an average power of an output signal of said Digital converter section;

5 power comparing section for comparing average powers of output signals of said Digital converters; and

power controlling section for controlling power supplied to said Fourier transform section of each of said plurality of receiving systems based on a result of comparison
10 by said power comparing section.

12. The orthogonal frequency division multiplexing receiving apparatus as set forth in claim 11, wherein said power controlling section supplies drive power only to said
15 Fourier transform section connected to a receiving antenna having a maximum average power and shuts off power supplied to Fourier transform sections connected to other receiving antennas.

20 13. A receiving method for selectively using a plurality of orthogonal frequency division multiplexing (OFDM) reception signals received from a plurality of receiving antennas, said method comprising the steps of:

down-converting a reception signal received from at
25 least one of said plurality of receiving antennas from radio frequency band signals to a base band signal;

converting an analog base band signal into a digital signal;

Fourier-transforming the digital signal converted at
30 said converting step;

extracting a signal of sub-carrier in a frequency

domain from said Fourier-transformed digital signal;

comparing powers of output signals of said
Fourier-transforming step for each sub-carrier and
selectively combining the powers of the output signals for
5 each sub-carrier; and

controlling power supplied at said down-converting
step, said digitally converting step, said
Fourier-transforming step, and said comparing step performed
corresponding to said plurality of receiving antennas, based
10 on sub-carrier selection information from said sub-carrier
selecting step.

14. A receiving method for selectively using a plurality
of orthogonal frequency division multiplexing (OFDM)
15 reception signals received from a plurality of receiving
antennas, said method comprising the steps of:

down-converting reception signals received from said
plurality of receiving antennas from radio frequency band
signals to base band signals;

20 converting analog base band signals into digital
signals;

Fourier-transforming the digital signals converted at
said converting step;

extracting carrier signals in a frequency domain from
25 the Fourier-transformed digital signals;

comparing powers of output signals of said
Fourier-transforming step for each sub-carrier and
selectively combining the powers of the output signals for
each sub-carrier;

30 detecting average powers of output signals of said
down-converting step;

comparing the average powers of the output signals of said down-converting step; and

controlling power supplied at said A/D converting step and said Fourier-transforming step based on a result of comparison by said power comparing step.

15. A receiving method for selectively using a plurality of orthogonal frequency division multiplexing reception signals received from a plurality of receiving antennas, said receiving method comprising the steps of:

down-converting reception signals received from said plurality of receiving antennas from radio frequency frequency band signals to base band signals;

converting analog base band signals into digital signals;

Fourier-transforming the digital signals converted at said converting step and extracting carrier signals in a frequency domain from the Fourier-transformed digital signals;

comparing powers of output signals of said Fourier transforming step for each sub-carrier;

selectively combining powers of the output signals for each sub-carrier;

detecting average powers of output signals of said converting step;

comparing the average powers of the output signals of said converting steps; and

controlling power supplied at said Fourier transforming step based on a result of comparison by said power comparing step.